

West Africa Regional Workshop on Mangroves and Climate Change

Final Report



Elmina, Ghana
18 – 22 May 2014



Acknowledgments

This first ever “West Africa Regional Experts’ Workshop on Mangroves and Climate Change” was designed, developed and conducted with the commitment and efforts of many individuals and institutions that made the workshop a reality and a success. The Forest Carbon, Markets and Communities Program (FCMC) and the US Forest Service International Programs organized this workshop, with technical contributions from the United States Agency for International Development (USAID).

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The organizers praise the contribution of all participants; their knowledge and technical expertise were invaluable to achieve the workshop objectives.

Financial support for the workshop came from the USAID. The workshop was facilitated by Mr. Gregory Garbinsky, InterWorks LLC, and was designed by Mr. Stephen Kelleher (FCMC), Mr. Jason Ko (US Forest Service), Mr. Nicodeme Tchamou (USAID/West Africa) and Mr. Garbinsky.

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Executive Summary

An experts' workshop on Mangroves and Climate Change in West Africa, organized by FCMC and the US Forest Service (USFS) Office of International Programs, was held in Elmina, Ghana from May 18 – 22, 2014. The workshop brought together 48 practitioners, policy makers and researchers from the West African countries of Guinea, Sierra Leone, Liberia, Cote d'Ivoire and Ghana. In addition to those from USFS and FCMC technical resource experts from Cameroon, Nigeria, and Senegal also contributed. Regional research and policy institutions, such as the Center for International Forestry Research (CIFOR), the Mano River Union (MRU) and the Economic Community of West African States (ECOWAS) also participated as did representatives from the United States Agency for International Development (USAID) from Washington and the West Africa Regional Mission.

Based on prior scoping by USFS and FCMC, and an in-depth pre-workshop survey taken by participants and established experts and stakeholders, it was determined that the desired outcomes for the workshop were:

- 1) Increase awareness of the importance of mangroves
- 2) and other coastal forested wetlands and the ecosystem services that they provide, including specifically their role in addressing climate change adaptation and mitigation issues; and
- 3) Identification of gaps, needs, and opportunities to strengthen national and regional collaborations within and between practice, policy and research regarding mangroves and sustainable mangrove management.

For the purposes of the workshop and this report mangroves are defined as "...salt tolerant evergreen forests that thrive in the inter-tidal zones between dry land and the open ocean in tropical and sub-tropical regions of the world. (Dahdouh-Guedas, 2002)."

To achieve these outcomes, attendees participated in a series of sessions and working groups as follows:

- An overview of the various benefits of mangrove systems: ecological, biodiversity, socio-economic, and economic;
- National and regional prioritization of mangrove benefits;
- Presentations of case studies of mangrove management and integration of research into policy and practice;
- A field visit to a local community to explore benefits and challenges to sustainable mangrove management;
- Overview of several existing mangrove networks globally and in Africa;
- Small group thematic gap analysis of policy, practice and research areas;

- Discussion of specialized technical areas presented by the United Nations Environment Program (UNEP), Cameroon Wildlife Conservation Society, University of Ghana, and West African Association for Marine Environment; and
- National and regional discussion, analysis and presentation of priority gaps and needs within policy, practice and research.

The outputs of the working groups confirmed that regional priorities for mangrove management should be centered on carbon sequestration (mitigation), coastal protection (adaptation), sustainable community energy use (firewood/charcoal), and fisheries habitat conservation. Mangroves have been traditionally sidelined as priority ecosystems, their ecological and economic roles and functions not well understood and thus undervalued by the general public and policy makers. Many valuable projects and programs exist in priority mangrove areas, however, they tend to be stand-alone activities and reflect a lack of more concerted coordination at both the country and regional-level in all aspects of mangrove management across policy, research and practice disciplines.

To address these gaps and the lack of coordination, there is a need for interventions at both the national and regional levels, including strategy formulation and policy clarification. At the national level, concerted efforts are needed to harmonize mangrove management between varying ministries and government institutions in order to clarify which institutions have responsibility and authority for specific aspects of mangrove policy and management. Technical capacity and awareness regarding various aspects of mangrove science and management need to be strengthened at all levels, from universities to ministries to communities. Lessons learned from research and practice need to have stronger linkages with policy makers, and inform the development of policies at the national and regional levels. At the regional level, increased coordination by ECOWAS could result in significant benefits for awareness raising and coordination across borders to improve policy harmonization and the sharing of best practices, knowledge and experience.

A list of all presentations, including group work on identified priorities, gaps, and opportunities can be found at <https://sites.google.com/site/mangrovesworkshop/>.

Introduction

1.1 The state of mangrove ecosystems in West Africa

Mangrove forests and associated coastal and estuarine environments provide an array of ecosystem goods and services that support the livelihoods of millions of people in the tropics and sub-tropics. In the context of climate change mitigation, the role of mangroves as carbon sinks has become more apparent, as knowledge about their carbon sequestration capacity (they sequester about five times more carbon per unit area than any other forest ecosystem) is better understood. However, carbon pools of coastal wetlands (also known as “Blue Carbon”), including mangroves, are poorly understood at present and their potential for contributing to Reducing Emission from Deforestation and Degradation of Forests (REDD+) is underestimated



Figure 1. Site of field trip

or not estimated at all in national REDD+ strategies. This is particularly true in Africa. In terms of mitigation potential, the coastal and ocean vegetated habitats, especially mangrove forests, salt marshes, and sea grasses cover less than 0.05% of the sea bed but account for more than 50%, and as much as 71%, of all carbon storage in ocean sediments. In addition, these ecosystems comprise only 0.05% of the plant biomass on land but store a comparable amount of carbon per year to tropical forests. This ranks them among the most intense carbon sinks on the planet. On average, between 2 to 7% of coastal (blue) carbon sinks are being lost annually. These rates exceed the loss rates in tropical upland forests. Halting degradation and restoring both the lost coastal and marine carbon sinks, and slowing deforestation of tropical forests could result in mitigating carbon emissions by up to 25%. In addition, healthy mangrove ecosystems are of critical importance to coastal climate change adaptation strategies in the tropics.

Beyond their environmental value, mangrove ecosystems provide a host of socio-economic benefits. Coastal inhabitants rely heavily on mangroves to meet their livelihood and other economic needs. Mangroves are traditionally believed to provide better quality wood for smoking/drying fish, fuel wood, charcoal production for urban centers, construction materials, and as a source of preservatives and dyes for fishermen nets. Mangroves also serve as critical habitat for coastal and marine fisheries. The loss of these important resources poses an imminent

FCMC is a USAID-funded global program that focuses on forestry and climate change, and provides analyses and evaluation in this field, as well as training materials, meeting and workshop facilitation at local and national levels. The USFS and CIFOR have been at the forefront of efforts to advance the science and knowledge necessary to develop international REDD+ mechanisms for tropical wetlands, including mangroves, as part of a global USAID program, Sustainable Wetlands Adaptation and Mitigation Project (SWAMP). With support from USAID/SWAMP, USFS is working with several African countries, including Mozambique, Tanzania, Kenya, and Gabon, to: quantify carbon pools in mangroves; establish Measurement, Reporting and Verification (MRV) pilot sites; develop replicable methodologies to determine the carbon stocks of mangrove forests and associated land uses; and develop local and regional capacity for sustained research on carbon dynamics in tropical wetlands.

threat, which would be compounded by the critical roles that mangroves play in disaster mitigation, human health, food security, and economic development. Addressing the threat to mangroves is currently one of the largest gaps in climate change mitigation efforts. Integrating mangroves into national REDD+ strategies provides opportunities for action and the generation of multiple co-benefits.

The workshop presented a platform to tap into the expertise and experience on climate change mitigation, as well as mangroves and carbon issues by FCMC, the USFS and CIFOR; provided an opportunity to bring this experience and technical expertise, along with that of FCMC on REDD+ social and environmental issues, MRV and finance, to the table and assisted planners and policy makers in West Africa to better understand the potential for mangroves and REDD+ and the multiple social and environmental benefits they provide.

1.2 Objectives of the workshop

Based on the FCMC/USFS scoping mission a comprehensive survey was developed and circulated to key experts in the West African region as well as thematic experts to solicit ideas and input into the design and objectives for the workshop, and to orient the discussion topics so as to be responsive to the needs of workshop stakeholders. Based on the survey results and with additional input from the USAID West Africa Mission, the workshop was developed by FCMC and USFS to assess the status of mangrove knowledge and capacity in West Africa, specifically as it relates to practice, policy and research. The workshop



Figure 2. Mangrove fuelwood

aimed to highlight especially the role that mangroves and other coastal forested wetlands play in climate change mitigation and adaptation issues, including national and international REDD+ programs.

The workshop objectives were to:

- Reinforce the knowledge and understanding surrounding mangrove benefits;
- Strengthen the regional network of mangrove conservation practitioners;
- Identify gaps and opportunities in the scientific research on mangroves;
- Strengthen the dialogue on policy, research and practice around mangroves and climate change; and
- Share experiences, opportunities and constraints for implementing sustainable management projects in mangroves.

The desired outcomes of the workshop were:

- 1) Increase awareness of the importance of mangroves and other coastal forested wetlands and the ecosystem services that they provide, including specifically their role in addressing climate change mitigation and adaptation issues.
- 2) Identification of gaps, needs, and opportunities to strengthen national and regional collaborations within and between practice, policy and research regarding mangroves and sustainable mangrove management.

To achieve these objectives and outcomes, the workshop was organized around a series of technical presentations from regional and international policy makers, practitioners and researchers. Intended to orient, refresh and stimulate discussion, the presentations were focused on the various benefits that mangroves provide, and examples of projects, research and networks intended to enhance benefits. For the duration of the workshop, and based on the information provided in the expert presentations given, participants worked in small groups to identify priority benefits, gaps and challenges for sustainable management, and potential opportunities for intervention.

1.3 Attendance at the workshop

The workshop was attended by 48 experts drawn from USAID focus countries in West Africa including Cote d'Ivoire, Ghana, Guinea, Liberia and Sierra Leone, resource people from Senegal, Cameroon and Nigeria and local and international NGOs, development partners, national environment authorities, and other stakeholders. The list of participants is attached as **Annex 1**.

Workshop Outputs

2.1 Priority Benefits

Coastal protection

Mangroves serve as a buffer against coastal and upstream natural events and thus provide protection to cities, ecosystems and villages alike. During coastal storms and floods, mangroves moderate extreme events and protect against coastal erosion. Most villagers living in mangrove communities are aware of this critical benefit, but it is rarely taken into consideration at the national policy level. However, it is a key issue for adaptation strategies as climate change increases the frequency of extreme events and climate variability. Mangroves also play a critical role in water filtration and flood control resulting from upstream events, reducing erosion and maintaining ecosystem balances from terrestrial events as well.

Carbon sequestration

Recent research has found that mangroves store an enormous amount of carbon. With current international discussions surrounding REDD+ and climate change, carbon sequestration is a significant benefit that mangroves can provide. While carbon sequestration should not be seen as the sole benefit of REDD+ strategies in mangrove (or other) ecosystems, it can be used as a proxy to measure the success of mangrove management (i.e., increased carbon sequestration or decreased deforestation). Carbon finance can also potentially contribute a funding stream for future management interventions. Thus, it is important to understand the carbon dynamics and potential of mangroves when discussing their management and their potential in national REDD+ strategies.

Energy

Communities play an integral role in mangrove management, given their needs for sustainable livelihood options, and heavy reliance on the natural environment to contribute to basic livelihood needs. Mangroves are used for both firewood and charcoal production that is consumed locally and sold to external markets. Fish smoking is an important local enterprise that places intense pressure on mangrove forests. While alternative sources of energy can be explored to reduce the direct reliance on mangroves, equally important is working with communities to develop integrated sustainable use plans and increase awareness of the benefits of long-term management. Without community buy-in, mangrove management for practice, policy or research objectives will not succeed. The sustainable provision of energy resources is a key issue that needs to be addressed, and the workshop field trip had a significant focus on this issue.

Habitat protection

Mangroves provide critical habitat for a variety of species. Most important to national and regional economies is serving as nursery habitat for coastal fisheries. While exact figures are not known, a significant proportion of the ocean fish catch has early life stages in mangrove areas. It cannot be understated that deforestation of mangrove forests directly impacts fishery stocks. A variety of other species also call mangrove forests home, signifying a high level of biodiversity.

2.2 Identified Gaps and Challenges

Lack of national level awareness and coordination

Each country delegation present noted the lack of an overarching policy or strategy to guide mangrove management. Instead, mangroves are most often managed by multiple ministries (water, forests, fisheries, etc.) each with different or sometimes competing mandates. This results in a lack of clear understanding of where management responsibility and authority is vested. This is confusing to communities, project implementers, researchers and even policy makers themselves. It was further noted



Figure 3. Workshop participants

that in all participant countries that had or were developing a climate change strategy, mangroves had not been taken into sufficient consideration regarding their potential role and importance in both mitigation and adaptation. This issue stems from several sources, including a lack of awareness of high level policy makers about the importance of mangroves, and general confusion of how to address policy, practice and research gaps given the bureaucratic confusion.

Lack of coherence between policy, practice and research

A key objective of the workshop was to strengthen linkages between the policy, practice, and research sectors regarding mangrove management and climate change. These three sectors need to better communicate, collaborate and coordinate in order to be successful in addressing the challenges to sustainable mangrove management. Policies, both on the national and regional levels, needs to be informed by research and practice. Research should improve practice. Practice should drive research. Policy should enable both practice and research. In other words there are natural synergies between all of these disciplines. However, it was strongly underscored that there is a lack of established and systematic linkages between any of the three disciplines in all countries present, as well as at the regional level. While examples were given of certain individuals who are able to reach out across the sectors, these experiences were more anecdotal and not within the context of an organized or pervasive enabling framework. A nascent African-wide network, The African Mangrove Network exists but is not currently as strong or active in the West Africa region as it could be with additional support and resources.

Lack of coordination and collaboration between researchers and projects

In addition to a lack of coordination between policy, practice and research, there is currently no systematic coordination between researchers or between practitioners. Researchers and practitioners within one country and within the region need to share lessons learned, leverage resources, and cross-pollinate knowledge and information with their peers. Even within a single university this can be difficult, as mangroves might be addressed in forestry departments or in biology departments or elsewhere. On the program and project (practice) levels, mangroves are not usually a focal point, and thus tangential to results and activities, and not given adequate support compared to terrestrial natural resources.

Lack of data and research on a variety of issues regarding mangroves

Mangroves have been traditionally sidelined and seen as undesirable areas with no inherent value that should be converted to “more productive” uses. Participant agreed that this was an outdated perspective, underscoring that there remains a need for significant research and data collection to better understand the nature of mangroves, including their roles and functions in generating, or contributing to, the identified priority benefits. International research is advancing, but West African mangroves are unique both biologically and socio-economically. One critical need is for more knowledge and organized research to better understand West African mangroves, and especially their role in climate change and contributions to livelihoods in order to better inform all management aspects.

Lack of national and regional technical capacity

Across the board, a lack of technical capacity was noted regarding mangrove management and climate change. Not only are more focused technical experts needed, including those with research-based degrees on mangrove management and climate change, but also in related disciplines in the social sciences, for example, need to have a better understanding of mangroves and their role in climate change. From community development to fisheries management to forest management, mangrove technical capacity needs to be built, including for existing professionals. Often times, those assigned to manage areas with mangroves have little understanding of the uniqueness of this ecosystem and how to sustainably manage it, relying on terrestrial forest management training, which is not sufficient in a mangrove setting.

At the base of these challenges and gaps is the fact that mangroves and climate change is a new point of intersection for discussions on various levels. Climate change has highlighted the important role that mangroves play in coastal ecosystems and national economies, providing an opportune moment for increased awareness, intervention, integration and support.

2.3 Recommended Opportunities

Support awareness raising of mangrove benefits to governments, students and communities

As mentioned, mangroves traditionally are not valued properly for all the benefits that they provide. Much of this is due to a lack of understanding and awareness of what these benefits are. A critical first step is to continue to pursue outreach and education on the issues, especially related to climate change, which can be used to leverage stakeholder interest and openness to other policy or management interventions. Policy makers need to understand the complex dynamics and multiple values and benefits of mangrove systems to influence them to



Figure 4. Mr. Bradley Wallach, Deputy Mission Director of USAID Regional Mission for West Africa gives opening remarks

undertake required investments. Students and instructors in sectors that deal with aspects of mangrove management, such as fisheries, forestry and climate change, need to better understand and integrate mangroves considerations into their curricula. Communities need to better understand the direct and indirect environmental and economic benefits that mangroves provide to in order to foster sustainable mangrove management. Outreach is different than capacity building, as it touches a broad audience and communicates complex ideas through simplified methods to build buy-in to sustainable management. Outreach can, however, lead to interest in developing technical capacity.

Build technical capacity of key partners and increase research efforts

More technical experts are needed who understand and can communicate the detailed and varied roles mangroves play in order to achieve sustainable management. Policymakers should

have mangrove experts on staff so that they can make informed decisions, taking into account the uniqueness of mangrove ecosystems, while not treating them like terrestrial forests. Communities also need local champions to raise the awareness of local populations as to the benefits of sustainable management, and to lobby for and lead in the implementation of specific management activities.



Figure 5. Field trip host community

More research is also needed on mangroves ecosystems, the benefits they provide and their role in climate change mitigation and adaptation. Opportunities for focused studies should be sought out and created. Linkages between researchers and project implementers can catalyze these opportunities, as can raising awareness through regional and national networks. There stands much to be gained from a regional standpoint through research networks. Collaborative research and knowledge sharing at a regional level can increase the opportunities for action on all levels at a pace not achievable solely on the community or policy level alone, for example. There is a dearth of research on mangroves compared to other forest ecosystems, but with climate change an ever growing issue, more complete understanding is required in the region.

Support the formulation of national and regional mangrove strategies

Mangrove landscapes currently have unclear and overlapping management mandates from government institutions in most countries. A clear strategy should include a national mapping of institutions involved in mangrove management that delineates how they are to be managed and by which agency in order to clarify roles and responsibilities. This would immensely help guarantee their sustainable use and proper valuation. This should be done at a national level, but could be facilitated by a regional institution, like ECOWAS, to help countries share perspectives and consider all the factors that contribute to sustainable mangrove management. Mangrove ecosystems cross national boundaries, and a regional strategy could help to prioritize areas for conservation and restoration, identifying the locations and scales of priority mangrove forest landscapes in need of management intervention, while taking into account such factors as species composition and the relative threat of deforestation or poor management.

Provide significant support for the incorporation of mangroves into relevant national and regional strategies

Mangroves provide a series of diverse benefits across several different sectors. As such, mangroves need to be taken into account in these sectorial strategies, especially those concerning climate change, forest and fisheries policy, and coastal development strategies. Mangroves play an important role that bridges climate change mitigation and adaptation boundaries, making them key ecosystems for climate change strategies, including for REDD+. As unique forests, mangroves require special consideration for forest management, be it for

conservation, monitoring, or extraction of timber, non-timber or other forest products. Lastly, mangroves play a critical part of coastal ecosystem management from fisheries to protection against erosion to water filtration. Mangroves need to be better researched and that research needs to be communicated to policymakers and practitioners so that they are properly managed.

Strengthen existing networks to reinforce linkages between and within policy, practice, and research

ECOWAS, the Mano-River Union, the Canary Current Large Marine Ecosystem and Guinea Current Large Marine Ecosystem (CCLME/GCLME), the Abidjan/Nairobi Convention and UNEP all provide existing networks that could be strengthened with an increased focus on mangroves. Most participants agreed that ECOWAS could provide the lead for increased regional cooperation, but it would need the support and collaboration of other key partners. Improved networks would provide key fora for exchanging knowledge between practice, policy and research. Additionally, networks would provide fora for experts within one discipline to leverage the work of the others, increasing the exchange of ideas and collaboration. This first experts' workshop on mangroves and climate change was witness to several such exchanges between and within the policy, practice and research areas, and participants fully agreed that the outcomes of this initial workshop should be built on.

Conclusion

The first 'West Africa Regional Workshop on Mangrove and Climate Change' provided an initial opportunity for policy makers, practitioners, researchers and development agencies to meet and share information and experiences about the constraints to and opportunities for the sustainable management of mangroves in their countries in the face of a changing climate. While there are several past and ongoing projects, as well as research and policy initiatives, such as the Abidjan Convention, that have generated experiences and learning opportunities in West Africa and other regions, there was overwhelming consensus for increased investments in the priority needs areas that were identified and discussed during the four days of deliberations.

Interviews and surveys conducted during workshop planning led to better understanding of the links between mangroves and climate change, and hence became an explicit objective of the workshop. This included not only presentations on the impacts and scenarios of climate change in the region, but also on some of the opportunities that evolving climate change strategies, such as REDD+, provide to increase the attention to the strategic values of mangroves to policy makers, donor and research agencies, and other stakeholders. It was noted that issues related to climate change were not as thoroughly discussed as anticipated. At the same time there was agreement that issues related to climate change and mangroves in West Africa are not being adequately addressed or discussed in policy circles at the present time, thus limiting the scope for detailed discussion. The workshop provided a forum to raise the awareness of climate change issues, for mitigation and adaptation moving forward.

The workshop provided participants the opportunity to identify priorities and needs for increased attention to, and focus on, sustainable mangrove management. It also generated enthusiasm to bring the lessons learned back to their respective institutions and move ahead with the critical work needed on mangroves and climate change issues in West Africa. There was a consensus on the need for further workshops of this kind in order to delve deeper into the priorities identified, actions needed and how to move forward.

The presentations can be found at: <https://sites.google.com/site/mangrovesworkshop/>

Workshop Evaluations and Post-Workshop Feedback

An evaluation was conducted on the final day of the workshop to assess if the workshop objectives were met, if the structure and organization of the workshop was satisfactory, if the information and experience provided was useful for participants and to solicit information as to how workshops might be improved in the future. A qualitative assessment of the responses demonstrates that, by a wide margin, the participants 'strongly agreed' or 'agreed' that the workshop objectives were met and that they gained skills, knowledge and practical information from the workshop. The large majority of the participants also concluded that they were 'very satisfied' or 'satisfied' with the structure, content and facilities of the workshop. Some respondents made comments regarding specific aspects of the workshop, such as a desire that the more REDD+ and overall climate change elements were more thoroughly addressed.

There have been several positive comments from participants post-workshop noting that they have begun to apply some of the skills and knowledge gained at the workshop in their positions. Examples include:

- 'Thanks for the report and the opportunity provided for the training. It was a great exercise and learning experience'
- 'The workshop has been a great help to me for my project implementation.'
- 'We are committed to implementing knowledge acquired'
- 'I must say it (the workshop) was well organized and some of us have even started pushing and implementing some of the concepts in our organizations.'

Annex 1: List of Participants

Name	Organization	Country
Abdoulaye Diame	African Mangrove Network	Senegal
AGBAEZE UMAZI UDEAGHA	NEST, Nigeria	Nigeria
Ahmed Faya TRAORE	Eaux et Foret	Guinea
Aiah Kembay	CC Focal Point	Sierra Leone
Alexander Boinena	Forestry Training Institute	Liberia
ANAMAN Jean Douglas	National REDD+ Coordinator	Cote d'Ivoire
Anne Dix	USAID	West Africa
Bradley Wallach	USAID	Ghana
Carl Trettin	USFS	USA
Chris Gordon	UGhana-Legon	Ghana
Darlington Tuagben	FDA	Liberia
Denis Sonwa	CIFOR	Cameroon
Doussou Kaba	Agroforestry Resources Unlimited	Guinea
Eugene Cole	PROSPER	Liberia
Evan Notman	USAID	USA
Gordon Ajonina	CWCS	Cameroon
Greg Garbinsky	Interworks Madison	USA
Hussain Samad	MSI	USA
Isaac Morrison	MSI	USA
Jason Ko	USFS	USA
Jean Christophe Henry	Oceanium	Senegal
Jennifer Popick	Tetra Tech	USA
Jody Stallings	USAID	Ghana
Johnson BOANUH	ECOWAS/ECOWEP	Nigeria
Justice Camillus Mensah	Hen Mpoano/Coastal Fisheries Center	Ghana
Justice Odoi	USAID	Ghana
Koffi Konin	State Dept	Ghana
Mathieu Kone	Université d'Abobo-Adjamé	Cote d'Ivoire
Moussa Leko	ECOWAS	Nigeria
Mwita M. Mangora	WIOMN	Tanzania
N'GORAN Djè François	Office Ivorien Parcs et Reserves	Cote d'Ivoire
Nicholas Breslyn	USFS	Ghana
Nico Tchamou	USAID	West Africa
Olaf Zerbock	USAID	USA
Peter Mulbah	SADS	Liberia
Rose Pelagie Masso	Cameroon Ecology	Cameroon
Saah David	FDA	Liberia

Name	Organization	Country
Salieu Sankoh	West Africa Regional Fisheries Program	Sierra Leone
Saliou Diallo	Guinee Ecologie	Guinea
Samuel Kofi Nyame	IUCN	Ghana
Selly Camara	Ministere de l'Environnement, des Eaux et Forets Organisation	Guinea
Simeon Moribah	Mano River Union	Sierra Leone
Stephen Kelleher	FCMC	USA
Takehiro Nakamura	UNEP	Kenya
Yatta Kamara	Sierra Leone Wetlands Conservation Project	Sierra Leone
Yaw Kwakye	Forestry Commission	Ghana
Zebedee Njisuh	MSI	USA

Annex 2: Agenda

West Africa Mangroves – A Key to Climate Change Adaptation and Mitigation
 Ghana, May 18-22 2014
 Elmina, Ghana
 WORKSHOP AGENDA

Sunday: 18 May 2014 – Arrival Day			
Time	No.	Topic	Key Points/Objectives
5:00 pm	0.1	Registration, Welcome and Dinner <i>Greg Garbinsky – InterWorks</i> <i>Facilitator, Stephen Kelleher - FCMC, Jason Ko – US Forest Service</i>	<ul style="list-style-type: none"> ● Participant registration ● Opening welcome and introductions of participants and organizers ● Hosted dinner
Monday: 19 May 2014			
Opening the Box – Current Status of Mangrove Systems and Their Benefits			
Time	No.	Topic	Key Points/Objectives
8:00 – 9:00	1.1	Welcome Address <ul style="list-style-type: none"> ● <i>Alex Deprez, USAID Mission Director for West Africa</i> 	
		Welcoming Remarks: ECOWAS <ul style="list-style-type: none"> ● <i>Johnson Boanuh, ECOWAS Environment and Water Resources Directorate</i> 	
		Workshop Overview – Mangroves Plus <ul style="list-style-type: none"> ● <i>Anne Dix and Nico Tchamou, USAID West Africa Regional Mission</i> 	<ul style="list-style-type: none"> ● Overview of the workshop outcome, objectives and outputs
		Workshop Administration and Logistics <ul style="list-style-type: none"> ● <i>IUCN and Greg</i> 	
9:00 – 9:30	1.2	Benefits of Mangrove Systems: a. Mangrove Ecology, Biodiversity and Ecosystems Services <ul style="list-style-type: none"> ● <i>Chris Gordon-University of Ghana-Legon</i> 	<ul style="list-style-type: none"> ● After this presentation, participants should be able to: <ul style="list-style-type: none"> ● Understand the current state of knowledge of the ecological, biodiversity and ecosystem benefits of W. African mangrove systems ● Understand the relationship between mangroves and climate change, specifically the areas of adaptation and mitigation
9:30 – 10:00		Benefits of Mangrove Systems:	<ul style="list-style-type: none"> ● After this presentation, participants should be able to:

		b. Socio-economic Benefits of Mangroves – Case Study <ul style="list-style-type: none"> Jean Christophe Henry: <i>Oceanium – Senegal</i> 	<ul style="list-style-type: none"> Understand the contribution that mangroves can make towards socio-economic and livelihood outcomes Understand the relationship between coastal communities and mangroves
10:00	BREAK		
10:30 – 11:00	1.2 cont.	Benefits of Mangrove Systems: c. Economic and Livelihood Benefits of Mangroves – The Case for Fisheries <ul style="list-style-type: none"> Salieu Sankoh– <i>West Africa Regional Fisheries Program</i> 	<ul style="list-style-type: none"> After this presentation, participants should be able to: <ul style="list-style-type: none"> Understand the roles and contributions of mangrove systems in the local and national economies in W. Africa – case study on fisheries (locally critical, nationally important, regionally threatened)
11:00 - 12:00	1.3a	Identifying National and Regional Benefits: Small Group Work – Identifying Benefits at the National and Regional Levels <ul style="list-style-type: none"> Greg Garbinsky 	<ul style="list-style-type: none"> After this session, participants should be able to: <ul style="list-style-type: none"> Concisely summarize the priority national and regional benefits that mangroves provide (ecological, socio-economic, economic) Break out into country and regional organization groups
12:00 – 1:00	1.3b	Small Group Results Report Out in Plenary (5-8 min. each) <ul style="list-style-type: none"> Greg, <i>Group Leads</i> 	<ul style="list-style-type: none"> Report of the small groups in plenary sessions, identifying benefits of mangroves in each country and the region (Six reports: Ghana, Sierra Leone, Guinea, Cote d’Ivoire, Liberia and Regional Organizations)
1:00	LUNCH		
2:00 – 3:30	1.4	Case Studies Session: Integrating Mangroves into Policy, Practice and Research	<ul style="list-style-type: none"> After this session, participants should be able to: <ul style="list-style-type: none"> Understand, through the presentation of case studies, how mangroves could be integrated into national and regional policy, practice and research
		a. Mangroves in Coastal Planning and Management - The case of Ghana (30 min.) <ul style="list-style-type: none"> Nicolas Breslin – <i>US Forest Service</i> 	<ul style="list-style-type: none"> After this presentation, participants should be able to: <ul style="list-style-type: none"> Understand how mangrove systems can be integrated into larger scale coastal management and planning (practice)
		b. How Mangroves Can Integrate into mitigation and adaptation including REDD+ nationally and globally (CIFOR-Experience) (30 min.) <ul style="list-style-type: none"> Denis Sonwa – <i>Center for International Forestry Research</i> 	<ul style="list-style-type: none"> After this presentation, participants should be able to: <ul style="list-style-type: none"> Understand how mangrove systems can be integrated into national and global mitigation and adaptation strategies (policy)
		c. Mangrove Carbon Experience Globally and in Africa (USFS) (30 min) <ul style="list-style-type: none"> Carl Trettin – <i>US Forest Service</i> 	<ul style="list-style-type: none"> After this presentation, participants should be able to: <ul style="list-style-type: none"> Understand how mangrove research can be integrated into site and national level projects, with a focus on carbon (research)
3:30	BREAK		
4:00 – 4:45	1.5	Mangrove Systems Review and Impact Evaluations <ul style="list-style-type: none"> Hussain Samad, Zebedee Njisuh – <i>MSI</i> 	<ul style="list-style-type: none"> After this presentation, participants should be able to: <ul style="list-style-type: none"> Understand and discuss the application of Impact Evaluation methodology, particularly within the context of West African mangrove preservation activities
4:45-5:45	1.6	Preparation of Country and Regional Groups Presentations for Day Three	<ul style="list-style-type: none"> Participants break up into the five country groups and one regional organizations group to prepare their 5 – 10 minute presentation on current status of:

		<ul style="list-style-type: none"> • Greg <p>(Note: Participants may use evening time as needed to prepare as well.)</p>	<ul style="list-style-type: none"> • National Climate Change Strategy (incl. adaptation/mitigation/REDD+) • Lessons learned from REDD+ projects and programs: • Mangrove research in the country – ongoing or needed • National policies dealing with or affecting mangroves and what is the focal point, agency or organization
5:45		Field Trip Orientation <ul style="list-style-type: none"> • Greg, IUCN 	<ul style="list-style-type: none"> • Participants will be provided instructions and information regarding the next day's field trip to mangrove region.

Tuesday: 20 May 2014 Field Trip to Anlo Beach Wetlands, Pra River Estuary			
Time	No.	Topic	Key Points/Objectives
All Day	2.1	Field Trip to Anlo Beach Wetlands, <ul style="list-style-type: none"> • IUCN, Friends of the Nation (FoN), Group Leads from Day 1, Greg 	<ul style="list-style-type: none"> • Informal field debriefing will be held in the field immediately following the field trip • After this field trip, split into 4 thematic groups – 1) biodiversity/ecological, 2) socio-economic 3) economic, and 4) climate-change mitigation and adaptation – participants will to compile lessons learned, observations and implications from the field trip and should be able to: <ul style="list-style-type: none"> • Understand and describe the practical applications, challenges and the reality of implementation in the 4 thematic areas • Respond to key questions on each theme (TBD) • Each group will report out on-site to plenary before leaving the field site

Wednesday: 21 May 2014 Exploring the Box: Moving Forward on Mangroves of West Africa			
Time	No.	Topic	Key Points/Objectives
8:30		Recap of Day 2 Field Trip and Overview of Day 3	<ul style="list-style-type: none"> • Recap learnings and observations from previous day; overview of Day 3
8:45 – 10:30	3.1	Country and regional group work from Day 1 continued – integrate information from field trip into presentations Small Group Presentations: Country and Regional Presentations in Plenary <ul style="list-style-type: none"> • Greg, Group reps 	<ul style="list-style-type: none"> • Re-form Country Groups/Regional Group. After this session, participants should be able to: <ul style="list-style-type: none"> • Describe and present the status of their national/regional mangrove programs and perspectives in country and region. • Compare and contrast outcomes to identify common threads and where resources or opportunities may help to meet some of identified gaps
10:30		BREAK	
11:00 – 12:00	3.2	Case Studies Session: Regional and African Mangrove Networks: their role and potential in policy, practice, and research <ul style="list-style-type: none"> • Selly Camara - Guinea 	<ul style="list-style-type: none"> • After this session, participants should be able to: <ul style="list-style-type: none"> • Be aware of various mangrove networks that are currently operating • Brainstorming small group activity to help identify challenges and areas of opportunity to build on or strengthen existing networks and/or create new linkages
		a. Case Study: Developing - Mangrove Networks – The case of the African	<ul style="list-style-type: none"> • After this presentation, participants should be able to: <ul style="list-style-type: none"> • Be knowledgeable of the African Mangrove Network, its role and potential in policy, practice, and

		Mangrove Network <ul style="list-style-type: none"> • <i>Abdoulaye Diame</i> 	research
		b. Case study: Western Indian Ocean Mangrove Network <ul style="list-style-type: none"> • <i>Mwita Mangora</i> 	<ul style="list-style-type: none"> • After this presentation, participants should be able to: <ul style="list-style-type: none"> • Be knowledgeable of the Western Indian Ocean Mangrove Network, its role and potential in policy, practice, and research, and how lessons learned might be applied in West Africa
		c. Central Africa Women's' Mangrove Network <ul style="list-style-type: none"> • <i>Masso Rose Pelagie</i> 	<ul style="list-style-type: none"> • After this presentation, participants should be able to: <ul style="list-style-type: none"> • Understand the Central Africa Women's' Mangrove Network, its role and potential in policy, practice, and research, and how lessons learned might be applied in West Africa
12:00 – 12:30	3.3	a. Small Group Work on Opportunities and Challenges in Building and/or Strengthening Networks <ul style="list-style-type: none"> • <i>Greg, Group reps</i> 	<ul style="list-style-type: none"> • After this session, participants should be able to: <ul style="list-style-type: none"> • Identify challenges and areas of opportunity to build on or strengthen existing networks and/or create new linkages related to policy, practice and research • Broken out into “random” groups
12:30 - 1:00		b. Report out of Small Group Work from Session 3.2b <ul style="list-style-type: none"> • <i>Group reps</i> 	<ul style="list-style-type: none"> • Report back to Plenary on opportunities for enhancing networking in mangrove systems knowledge and information
1:00	LUNCH		
2:00 – 3:30	3.4	Round-Robin Carousel Sessions (World Café): Four Topics in rotation: <p>a. Educational toolbox on Mangroves and Carbon (CIFOR)</p> <ul style="list-style-type: none"> • <i>Denis Sonwa - CIFOR</i> <p>b. Effects of Human Activities on Mangroves (includes hydrology)</p> <ul style="list-style-type: none"> • <i>Abdoulaye Diame (WAAME)</i> <p>c. Central Africa Mangrove Carbon Project</p> <ul style="list-style-type: none"> • <i>Gordon Anjonina – Cameroon Wildlife Conservation Society</i> <p>d. Mangrove Adaptation Experience</p> <ul style="list-style-type: none"> • <i>Chris Gordon – University of Ghana-Legon</i> 	<ul style="list-style-type: none"> • Short 5 minute overview of each of the 4 subject areas • Participants then select their first choice topic and go to that table of most interest to them (If too many participants choose one particular table some will be requested to go to their second choice) • Participants rotate around to four different roundtable presentations (1st stop half hour, second stop 15 minutes, 3rd and 4th stop 10 min. each)
3:30	BREAK		

4:00 – 5:30	3.5	Simultaneous sessions and mixed language groups on Policy, Practice and Research Greg	<ul style="list-style-type: none"> After these simultaneous sessions, participants divided into 3 groups: Policy, Practice and Research (arranged according to their main area of concern in their home setting) perhaps subdivided by language) Based on what has been seen/heard thus far in the workshop (and their own experience), each group will be responding to the following questions: <ul style="list-style-type: none"> What are the specific gaps you see in your specific thematic area (Policy, Practice or Research)? How do you propose to address these gaps? What linkages can you propose to better link Policy to Practice to Research across technical expertise areas?
		Report Back to Plenary – Policy, Practice and Research groups Greg	<ul style="list-style-type: none"> Each of the three groups (P, P, R) reports their results back to plenary, answering each of the three questions
5:30	3.6	Preparation of Country and Regional Groups Presentations for Day 4 (Note: Participants may use evening time as needed to prepare as well.)	<ul style="list-style-type: none"> Extracting from the results of the last Session 3.5, participants break up into the five country groups and one regional organizations group to prepare 5 – 10 minute presentation synthesizing the outcomes from session 3.5 as it relates to the country or regional grouping. The groups prepare a report at the national (or regional for the regional group) level on: <ul style="list-style-type: none"> What are the current gaps that you are facing in each of these three areas (Policy, Practice and Research)? What opportunities can you identify for addressing these gaps in your country or the Region? What linkages proposed in Session 3.5 can you identify that will work in your particular situation to link policy to practice to research?

Thursday: 22 May 2014			
<i>Closing the Box – Country/Regional Presentations and the Way Forward</i>			
Time	No.	Topic	Key Points/Objectives
8:30 – 8:45	4.1	Recap of Day 3; Overview of Day 4	<ul style="list-style-type: none"> Quick summary review of Day 3; major impressions Overview of Day 4
8:45 – 11:00	4.2	Finalize Small Group Work and Country and Regional Presentations Greg and groups	<ul style="list-style-type: none"> After this session participants will have: <ul style="list-style-type: none"> Finalized reports and present to plenary on the gaps and opportunities identified by on country and regional levels Presented immediate action steps to strengthen linkages and partnerships among policy, practice and research Compared and contrasted outcomes to identify common threads and where resources or opportunities may help to meet identified gaps
BREAK To be taken during Session 4.2 in place			
11:00 12:00	4.3	Way Forward, Evaluation and Closing Nico, Stephen, Greg	<ul style="list-style-type: none"> After this session participants will have: <ul style="list-style-type: none"> Identified key and common elements for a regional approach to sustainable mangrove management in a world of climatic change Participants provide general feedback on the workshop and fill out evaluations form

Annex 3: Proceedings

Day 1: Workshop Presentations and Group Work

Arrival night orientation

Upon arrival at the workshop venue, participants briefly met to go over the program, as well as administrative and logistical questions. The opportunity was taken to have an ice-breaker activity for which participants were asked to identify the most important benefit and challenge to sustainable management for mangroves. The results of this exercise confirmed the orientation of the workshop with focus on the areas of community management, wood harvesting, fisheries benefits, carbon sequestration, and coastal protection.

Opening Remarks

The initial session of the workshop (Session 1.1, see Agenda, **Annex 2**) was entitled ‘Opening the Box – Current Status of Mangrove Systems and Their Benefits,’ and included welcoming remarks followed by presentations on the various ecological and socio-economic benefits of mangroves.

Opening remarks were made by USAID and ECOWAS to frame the goals and context of the workshop. Mr. Bradley Wallach, Deputy Mission Director of USAID Regional Mission for West Africa (Accra), spoke of the challenges facing the world concerning climate change issues. He spoke about the effects that are already seen in West Africa. He mentioned that West Africa is “fortunate and estimated to have thirteen percent (13%) of the world’s mangroves making up to about 2.4million hectares found in 19 West African countries” that contribute significantly to the \$400million commercial fish industry. Mr. Wallach noted that mangroves can sequester up to 1000 tons of carbon, more than thrice as much as tropical rainforests, as well as being some of the most biodiverse habitats. Despite these values, Mr. Wallach stated that mangroves are poorly understood and marginalized in national plans and management.

Dr. Johnson Boanuh, the Director of the Environment program at ECOWAS delivered a statement from Dr. Lapodini Marc Atouga, Commissioner for Agriculture at ECOWAS. It is noted that the objectives of the workshop are in line with the ECOWAS Forest Convergence Plan (FCP) objective: to enhance vital services generated by different forest ecosystems, including their contribution to food security and people’s means of subsistence. The audience was reminded of the seven priority areas of intervention of the FCP, as well as the process of their elaboration. Dr. Boanuh stated that even though Mangrove Ecosystems are of critical importance to coastal socio-economic development and livelihood of the people such as providing fuel wood for drying fish, charcoal production, construction materials, as well as provision of critical habitat for coastal and marine fisheries, they are under serious threat of degradation. ECOWAS thanked the US Government for their support and wished success in achieving the objectives.

Benefits of Mangrove Systems

In order to ensure that all participants were on the same page in terms of baseline information, a series of presentations were given by experts on the various benefits that mangroves provide. The presentations were:

1. Ecology, biodiversity and ecosystem services: by Prof Chris Gordon, University of Ghana-Legon. The objectives of this presentation were for participants to understand the current state of knowledge of the ecological, biodiversity and ecosystem benefits of W. African mangrove systems, and understand the relationship between mangroves and climate change, specifically the areas of adaptation and mitigation
2. Socio-economic benefits of mangroves - Case study of rice growing in Casamance, Senegal: by Jean Christophe Henry, Oceanium. The objectives of this presentation were for participants to understand the contribution that mangroves can make towards socio-economic and livelihood outcomes, and to understand the relationship between coastal communities and mangroves
3. Economic and Livelihood Benefits of Mangroves – The Case of Fisheries: Presentation by Mr. Salieu K. Sankoh, West Africa Regional Fisheries Programme. The objectives of this presentation were for participants to understand the roles and contributions of mangrove systems in the local and national economies in West Africa through a case study on fisheries.

Full presentations can be found at the workshop website:

<https://sites.google.com/site/mangrovesworkshop/>

Identifying National and Regional benefits (small group work)

Based on the presentations regarding the diverse benefits that mangroves provide, participants were subsequently divided into groups as follows:

- Guinea
- Sierra Leone
- Liberia
- Cote d'Ivoire
- Ghana
- West Africa Regional

The objective for the group work was to concisely summarize the priority national and regional benefits – ecological, socio-economic and economic – that mangroves provide. This exercise was meant to stimulate discussion on the various benefits that mangroves provide and their relative importance in each country, raise awareness of the broader suite of benefits, and to understand the national priorities so as to being to identify commonalities across the region.

The country team's priorities were presented as follows:

Ghana:

- Fisheries
- Recreation/Tourism
- Biomass Energy
- Climate Change Mitigation

Liberia:

- Energy Source
- Food and health security
- Carbon stock
- Habitat for Vulnerable/ threatened species

Cote d'Ivoire

- Wildlife habitat
- Fish and wood production
- Coastal protection and carbon sequestration

Guinea

- Adaptation of coastal communities
- Coastal erosion control and mangrove conservation
- Research and valuation of biological benefits of mangroves

Sierra Leone:

- Sustainable fisheries management
- Wetlands and biodiversity conservation
- Fuel wood and building materials extraction
- Climate change mitigation/ adaptation and field research

Policy, Practice and Research Case Studies

Following the overview session on the benefits of mangroves and related group work, representatives from select programs and projects presented what they were doing in the areas of Policy, Practice and Research, and how their work related back to the previously identified benefits. The objective was to have the participants understand, through the presentation of the case studies, how mangroves could be integrated into national and regional policy, practice and research programs and strategies.

The presentations were:

1. Mangroves in Coastal Planning and Management - The case of Ghana: Nicolas Breslin, USFS. The objective of this presentation, under the rubric of practice, was for participants to understand how mangrove systems can be integrated into larger coastal management and planning.
2. How Mangroves can integrate into mitigation and adaptation including REDD+ nationally and globally: Denis Sonwa, CIFOR. The objective of this presentation, under the rubric of policy, was for participants to understand how mangrove systems can be integrated into national and global mitigation and adaptation strategies.
3. Mangrove Carbon Experience in Globally and in Africa: Carl Trettin, USFS. The objective of this presentation, under the rubric of practice, was for participants to understand how mangrove research can be integrated into site and national level projects, with a focus on carbon.
4. Mangrove Programs/Projects Desk Studies and Monitoring: MSI. MSI gave two presentations during this session. One was 'Impact Evaluation as an Aid to Scaling-Up' and the other was 'West Africa Mangrove Conservation and Sustainable Use: A Review.'

The full presentations can be found at: <https://sites.google.com/site/mangrovesworkshop/>

The participants were subsequently requested to prepare a presentation for Day 3 using the priority benefits as a focus and to report out to plenary on the status of mangrove programs and perspectives in their respective countries and the region.

Day 2: Field trip

Field Site Background

The workshop included a field trip to the 'Shama-Anlo Wetland/Mangrove Sustainable Development Project'. The actual site visit was the area of the project known as the Anlo Beach community, a picturesque beach located in the Shama district of the Western Region in Ghana.

The project lies within a coastal area where fishing and farming are the major economic activities. It is a biologically diverse system comprising the Pra river estuary, mangrove forests, salt marshes and swamps. It serves as a habitat for approximately 37 fish species comprising 23 marine, four brackish water and nine freshwater fishes, including two shrimp and one crab species.

Like many other wetlands in the area, the Anlo Beach wetland is threatened by degradation resulting from over-exploitation of mangrove wood for fish smoking, dumping of solid waste and bad fishing practices. The Conservation of Anlo Beach project, launched by Friends of the Nation (FON) and supported by the French Global Environment Facility (AFD/FFEM/PPI) and the IUCN France small grants program, seeks to conserve the wetland and its biodiversity through facilitating the creation of local institutions for conservation, improving wetland management practices, improving livelihoods in fringe communities and deepening stakeholder participation in land use planning at the district level.

The general aim of the project is to contribute to biodiversity conservation and improvement in the living conditions of the populations along the fringes of Anlo Beach wetlands. FON supports the local population through the introduction of livelihood activities and transferring skills, such as the building of energy efficient fish smoking ovens. Other measures include facilitating improved wetland management practices – like re-planting mangroves around the wetlands, developing a plan to stop or reduce the cutting of mangroves and formulating land-use policies for protection and conservation of Anlo Beach wetland. Through the project, it is estimated that at least 8000 fisher folk and farmers will indirectly benefit from sustainable management of the wetland and livelihood opportunities.

The project directly targets fish mongers and fish processors, unemployed youth, fishermen, farmers, community leaders and land owners. To ensure effective management, collaboration between the targeted communities and planning entities on the regional level, planning officers of Shama District Assembly, officials of Environmental Protection Agency and Wildlife Services Division will be addressed.

Field Trip Methodology

A pre-visit briefing and presentation of the Anlo Beach community and the goals and objectives of the project to be visited was provided to workshop participants by FON on the evening before the field visit. This provided the opportunity for workshop participants to gain an understanding of what they would be visiting the following day.

Given the large number of participants it was initially decided to break into four groups that would align with the thematic presentations given on day one, which were: 1) biodiversity/ecological aspects of mangroves; 2) socio-economic and livelihoods aspects; 3) economic and fisheries aspects; and 4) climate-change mitigation and adaptation, including restoration. Once on site it was decided to merge the four groups into two for logistics reasons, but to maintain the four thematic topics. Thus, the socio-economic group paired with the economic/fisheries group and the biodiversity/ecological group paired with the climate change

mitigation and adaptation/restoration group, ensuring that all four themes would still be explored.

The guidance provided to the field groups was as follows: compile lessons learned; observations and implications from the field trip and better understand and describe the practical applications; and challenges and the reality of the project implementation across the four thematic areas.

Summary of Observations from the field trip

The initial intent of the organizers was to have debriefing sessions at and with the community. However, it was decided that, that was not the best idea given that some of the groups had some critical observations, and the intent of the visit was to learn and observe as opposed to evaluate. Time was allocated the following morning in order to get feedback from the thematic groups in the lessons from the field trip. The four groups that observed the Anlo Beach community wetlands and mangrove restoration compiled their observations and presented their major findings in the categories of: Biodiversity; Economic; Socio-Economic/Fisheries; and and Climate Change.

The observations can be found at: <https://sites.google.com/site/mangrovesworkshop/>

Field Trip Summary

Overall feedback from participants was that the field trip was a valuable contribution to the workshop and their understanding of the role of mangroves and their related co-benefits to livelihoods and the environment. It provided the opportunity to have policy makers, practitioners and researchers looking at the same issues from different perspectives. It also provided some participants who had not experienced a mangrove area first-hand the chance to do so. On the other hand, one participant commented that it would have been helpful to have more of a hands-on experience during the field trip, as opposed to mainly observation and enquiry.

There were some logistical challenges with the field trip including the lack of promised boats to take participants more deeply into the mangrove areas. There was also some confusion at the lunch break when participants were segregated from the community for lunch. There was also some concern raised that the visit could risk increasing expectations of community members for increased investments.

Day 3: Workshop Presentations and Group Work

Group Work Presentations

On Day 1, country and regional groups were requested to prepare a presentation to present on Day 3 of the workshop on the current status of mangroves in their country including:

- 1) Existing policies, frameworks or strategies that take mangroves into account;
- 2) Responsible institutions;
- 3) Ongoing projects, programs, and research; and

4) Challenges to sustainable management of priority benefits.

These presentations were meant to stimulate critical thinking on the status of mangroves in each country as well as identify common themes, challenges and gaps that could be addressed at a regional level. Some common themes were:

- A lack of awareness of policy makers and other stakeholder concerning the multiple benefits of mangrove and coastal wetland forests;
- The lack of clear management responsibility over mangroves between government institutions and policy;
- An abundance of existing research across the countries that could be coordinated or synergized;
- Several national projects that intervene in mangroves;
- A lack of coordination at the national and regional levels between governments, donors and projects concerning mangroves and coastal forest management;
- A lack of connectivity between policy, practice and research; and
- A lack of consideration for mangroves in national climate change strategies or policies.

The full presentations can be found at: <https://sites.google.com/site/mangrovesworkshop/>

Case Studies Session: Regional and African Mangrove Networks: their role and potential in policy, practice, and research

This session started with an orientation by Dr. Selly Camara of Guinea. Dr. Camara defined networks, their benefits and strengths as well as identifying some examples within the region and their work. This introduction was followed by three presentations of mangrove networks in Africa. These were:

- 1) The case of the African Mangrove Network: Abdoulaye Diame. The objective of this presentation was for participants to be knowledgeable about the African Mangrove Network and its role and potential in policy, practice and research.
- 2) Western Indian Ocean Mangrove Network: Mwitanga Mangora. The objective of this presentation was for participants to be knowledgeable of the Western Indian Ocean Mangrove Network, its role and potential in policy, practice, and research, and how lessons learned might be applied in West Africa.
- 3) Central Africa Women's' Mangrove Network: Rose Pelagie Masso. The objective of this presentation was for participants to understand the Central Africa Women's' Mangrove Network, its role and potential in policy, practice, and research, and how lessons learned might be applied in West Africa.

The presentations can be found at: <https://sites.google.com/site/mangrovesworkshop/>

The participants were again broken up into small groups, but this time into thematic technical groups on Policy, Practice, and Research. Groups were also organized by French and English speakers. The groups were given the following questions and asked to present on the results of their discussions:

- Based on what we have discussed to date and your own knowledge, what are the three major gaps in your thematic area that are common at the regional level?
- How can these three major gaps be addressed at the regional level? (opportunities for harmonization, coordination, economies of scale, sharing, etc.)
- Given the national and regional priorities and challenges presented, please identify three opportunities to establish or reinforce existing regional networks in your thematic area (Policy, Practice or Research).

The summaries of results from the presentations were:

English Policy Group - Gaps identified

- Lack of holistic Regional strategy to address common threats;
- No enforcement of strategies, policies and regulations; and
- Lack of current data on mangrove management and inability to integrate projects into national policies/programs strategies and agenda to address project sustainability.

How to address the Gaps

- ECOWAS should coordinate a national level mapping of institutions;
- Establish a regional data center on mangroves and climate and build national capacity;
- Engage regional/external technical assistance to incorporate mangrove management into national development plans;
- Establish donor coordination mechanism to support sustainable mangrove management; and
- Regional/external technical assistance to incorporate international development plans.

French Policy Group - Gaps identified

- Insufficient legal/ legislative framework on mangroves;
- Conflict and competition between the players engaged in mangrove management;
- Insufficient data on mangroves; and
- Lack of strategic communication on mangroves.

How to Address Gaps

- Establish a strategic mangrove management plan;
- Create a meaningful platform on mangroves and climate change from national to regional levels; and
- Establish a protocol towards collection of data and also creation of a data base.

Research group - Gaps identified

- Lack of coordination and information sharing;
- Lack of translation of research results into policy and actions; and
- Inadequate funding and capacity to characterize mangrove resources.

How to address Gaps

- Establish regional platforms/networks for data sharing;
- Organize regional workshops to translate research results into implementable policies; and
- Identify and coordinate donor organizations/mechanism externally and internally.

Practice group - Major gaps identified

- Limited communication and knowledge management among stakeholders;
- Inadequate technical capacity to ensure sustainability;
- Limited funds mobilization capacity; and
- Lack of best practices and means of development.

How to Address Gaps

- Strengthen existing networks;
- Foster a culture of openness among organizations/networks at regional level;
- Promote exchange of experience among practitioners at regional level;
- Support capacity building programs coordinated by ECOWAS;
- Creation of mangrove trust fund among ECOWAS member states; and
- Create awareness on donor requirement.

Opportunities to reinforce regional networks on policy, practice and research

- 1) Make use of the CCLME/GCLME and the Abidjan/Nairobi conventions, ECOWAS, CAEC, UNEP, etc.;
- 2) Create national platforms for networking and networked among existing regional networks on mangrove management and development; and
- 3) Create regional research network platforms.

The presentations can be found at: <https://sites.google.com/site/mangrovesworkshop/>

Because of the heightened interest in the group work and discussions, the program was changed from the original to allow for continued discussion in small groups. As a result the round-table carousel session was postponed until Day 4 and shortened to two rotations.

Day 4: Final Presentations and Carousel

Round Robin Carousel Presentations

Because of the larger re-allocation of time to small group work and discussion, the round-robin presentations only allowed for two rotations between groups. Each presenter gave a summary of their presentation to plenary and participants chose which presentation interested them the most. Presenters then led the discussion surrounding their topic.

- 1) Double win situations for mangroves: Takehiro Nakamura, UNEP
- 2) Effects of Human Activities on Mangroves: Abdoulaye Diame, WAAME
- 3) Central Africa Mangrove Carbon Project: Gordon Ajonina, CWCS
- 4) Mangrove Adaptation Experience: Chris Gordon, University of Ghana

The presentations can be found at: <https://sites.google.com/site/mangrovesworkshop/>

Final Country and Regional Presentations

The final output of the workshop had all participants back in their groupings by country and region. Each national group was requested the following:

- How can national governments and actors support the implementation of the priority regional opportunities at the regional level?
- What are three actions (one policy, one practice, one research) that members of your group and your national institutions can take to implement the opportunities that have been highlighted at this workshop?
- How can regional networks and organizations support national implementation of these actions?
- Please elaborate a succinct and convincing two sentence statement to convey the need and opportunities concerning sustainable mangrove management to a national minister level person.

The regional groups had the following questions:

- What are three priority actions to implement the regional opportunities identified today? (one policy, one research, one practice)
- How can regional networks and organizations support national priorities to implement these regional actions at the national level?
- How can national governments and actors support/engage regional networks and organizations to achieve these regional actions?
- Please elaborate a succinct and convincing two sentence statement to convey the need and opportunities concerning sustainable mangrove management to a regional audience.

These final output presentations represent the culmination of the workshop process. After identifying the priority benefits and challenges, after ground-truthing community level implementation and management, after discussing networks and thematic gaps and needs, the workshop participants were able to comprehensively make recommendations to the way forward at the national and regional level, identifying opportunities for collaboration and outreach in the areas of policy, practice and research.

Examples of these on the national level included policy recommendations, such as the development of national strategies and policies for sustainable mangrove management taking into account climate change, research recommendations, including quantifying the carbon stocks and other ecosystem services of mangroves, and practice recommendations such as conducting a technical needs assessment for the implementation of mangroves and climate change projects. On the regional level recommendations included that ECOWAS host a regional database of mangroves and climate change projects including results and best practices, and develops a sub-regional strategy and action plan on sustainable management of West African mangroves. The need for policy/practice dialogues to formulate workable policy and legal frameworks was also underscored.

The presentations can be found at: <https://sites.google.com/site/mangrovesworkshop/>